

REMARKS

In response to the final office action, Applicant has amended claim 21 to recite “providing a first intermediate dielectric on said first metallization plane, said first intermediate dielectric containing a carbon-containing silicon oxide.” Claim 21 has also been amended to recite “providing a liner layer made of a dielectric material on said first intermediate dielectric, said liner comprising material selected from a group consisting of silicon dioxide and silicon nitride.” These amendments further clarify the subject matter of the invention and clearly distinguish claim 21 from the cited prior art.

The Examiner rejected claims 21-23 and 25-27 under 35 U.S.C. 103(a) as being unpatentable over Jeng et al (US 5,744,865) in view of Sethi et al (US 5,573,973). The Examiner also rejected claims 21-27 under 35 U.S.C 103(a) as being unpatentable over Pio (EP 0 989 609 A1) in view of Jeng et al (US 5,744,865).

Claim 21 recites a first intermediate dielectric containing a carbon-containing silicon oxide. Using carbon-containing silicon for the first intermediate dielectric provides a low dielectric constant of about 3.0 and contributes far less to the capacitive coupling between adjacent interconnects than do conventional dielectric materials such as silicon oxides. Jeng, Pio, and Sethi neither describe nor suggest the use of carbon-containing silicon oxide to be used as a first intermediate dielectric layer.

In paragraphs 17 and 21, Pio suggests that first and second intermediate dielectric layers, 32 and 45 respectively, be composed of silicon dioxide. Compared to carbon-containing silicon oxide, silicon dioxide has a relatively high dielectric constant of about 4.5. Therefore, silicon dioxide would be unsuitable as a first intermediate dielectric in the Applicant's invention because the silicon dioxide would create significant capacitive coupling between adjacent interconnects. Like Pio, Sethi suggests a high dielectric constant material, boron phosphate silicate glass, as a first dielectric layer in col. 9, line 32.

Though Jeng describes the use of a low dielectric constant material to separate the first and second interconnects, he neither describes nor suggests using carbon-containing silicon oxide. In his table in col. 7, Jeng lists examples of low-dielectric-constant material: Parylene,

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spin-on glass, Xerogel, Aerogel, vapor-deposited polymer dielectrics (such as teflon and polyimide), or an air gap or inert gas void. Carbon-containing silicon oxide however is absent from Jeng's list. Furthermore, Jeng neither describes nor suggests using a liner layer material selected from a group consisting of silicon dioxide and silicon nitride.

Claim 21 is patentable over Jeng, Sethi, and Pio. Claims 22-27 depend on claim 21 and are thus patentable for at least some of the same reasons as claim 21.

Now pending are claims 21-27 of which claim 21 is independent. Applicant asks that all claims be allowed. No additional fees are anticipated. Please apply any other charges or credits to deposit account 06-1050.

Respectfully submitted,

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